Bull Trout Monitoring and Evaluation Workshop 2001
Bull Trout Data Summaries

As part of the Bull Trout Monitoring and Evaluation workshop, data summaries are provided to acquaint participants with the quality and quantity of census data available across the recovery units within the Columbia River Distinct Population Segment (DPS). Data sets provided may not be all inclusive and represent the best information currently available. No attempt was made to standardize data across the recovery units. This data summary is an initial step in characterizing census information. Data gaps undoubtedly exist and we welcome any additions, revisions, or changes to the existing information.

The types of available census information for the Columbia River DPS with regards to adult bull trout are redd counts, trapping (weirs, screw traps), mark/recapture, gill nets, creel surveys, radiotelemetry, and videography. Available census information for juvenile bull trout are electrofishing, snorkeling and screw trap data.

Data Summaries for 22 Recovery Units in the Columbia River and Klamath River DPS's

Oregon RU	Type of Census	Streams	Period of Record	Comments/Results
Willamette Ziller & Taylor, 1999	Redd surveys	Anderson Creek (McKenzie R.)	1989 - present	Anderson Creek index area (2.6 km) - 1989 to present; entire stream (3.8 km) from 1994 to present. Redds average 80 per year from1995 to 2000, range from 77 to 85.
		Olallie Creek (McKenzie R.)	1995 to present	Culvert improvement project in 1995, fry transfer 1995 and 1996, discontinued after redd observed in 1996. Redd counts range from 6 to 10 between 1995 and 2000.
		Mainstem McKenzie above Trail Bridge Reservoir	1994 to present	Estimates range from 0 to 12; surveys complicated by spring chinook salmon that spawn at the same time and location. Brook trout spawn several weeks later in the same area.
		Sweetwater Creek (Trail Bridge Res.)	1995 to present	No redds observed from 1995 through 1999. In 2000, two bull trout redds counted.
		Roaring River (SF McKenzie)	1993 to present	Redd surveys difficult in Roaring River due to turbulence. Counter and radio telemetry helped pinpoint timing and location. Between 1998 and 2000, redd counts increased from 6 to 25. Prior to 1998, 0 to 2 redd were counted in any year.
	Pool counts	McKenzie mainstem downstream of Trail Bridge Res.	1994 - 1999	Counts of bull trout ranged from 15 to 36 fish. Discontinued after 1999 because data were highly variable and inconsistent with redd counts in the basin.
		SF McKenzie	1995 through 1999	Counts ranged from 9 to 17.

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Willamette (continued)	Juvenile downstream migrants captured with 1.5 m rotary screw trap	Anderson Creek	1994 - present	Trap operated early February until the first week of June. During two years, trap operated into November to estimate the number of juvenile bull trout migrating out of Anderson Creek through the summer and fall months. Number, species, and length of all juvenile bull trout (age 1+) and a proportion of the fry (age 0+) captured were recorded. Percentage removed for reintroduction program. Between 1994 and 1996, the average number of fry captured in Anderson Creek was 1,893. This number increased to 7,283 between 1997 and 2000. The estimated capture if the trap ran continuously ranged from 5,308 in 1994 to 23,153 in 1998. Estimated trap efficiency for bull trout fry was approximately 60%.
		Olallie Creek, Lost Creek and SF McKenzie R. above and below Cougar Res.	1999	Operated for only a few months. No data cited.
	Snorkel survey and fyke trap	Fry release sites at springs in MF Willamette subbasin above Hills Creek Reservoir.	2000 to present	Monitor survival of fry transplanted starting in 1997; 6,439 fry released between 1997 and 2000 at seven sites. In June 2000, 67 juvenile in three age classes observed in Iko Springs (key release site); in July 2000, eight bull trout observed in MF Willamette River in vicinity of Iko Springs by snorkeling. No bull trout recovered in fyke trap.
	Vaki counter	Anderson Creek	1999 to present	In 1999, counter recorded 249 fish passing upstream and 214 downstream. Bull trout migrated at a higher rate during day light up (69%) and downstream (61%). Peak migration of bull trout through the fish counter during 1999 occurred during the middle of September. Bull trout ranged in size from 18-81 cm.
		Roaring River (SF McKenzie)	1999 to present	In 1999, counter recorded 41 fish passing upstream and 39 passing downstream. Most bull trout migrated upstream (66%) at night, while most downstream passage (71%) occurred during daylight hours. In 1999, most bull trout migrated (83%) into Roaring River during the first two weeks of September. Downstream migration peaked in late September and early October and was complete by early October. The average length of fish passing upstream was 42 cm and ranged from 21-58 cm.

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Willamette (continued)	Videography	Sweetwater Creek	1999 to present	Counts range from 5 (partial season count) in 1999, 11 in 2000, and 19 so far for 2001 (daylight hours). Creek was subject of restoration project in 1992 to improve access through culvert and reintroduction of fry above culvert (1993 through 1999)
		Leaburg Dam - McKenzie R.	1995 to present	Color camera added in 1997 increased ability to identify bull trout. Counts range from low of 1 in 1995 to high of 28 in 1999.
	Juvenile population estimate	Anderson Creek	1999	Modified Hankin & Reeves protocol (1988); night snorkeling. Juvenile bull trout (age 1 to 2+) observed in 60 habitat units was 106, an average of 1.8 bull trout per unit. The observed density of juvenile bull trout was highest in pockets and lowest in fast water units.
Hood Section 6 Take Report for 2000; ODFW data, unpublished	Day/night snorkel surveys	Clear branch above and below Lawrence Dam	1991 to present	In 1999 also surveyed Bear Creek, Lake Branch, and Tony Creek. Snorkel survey of Upper and Lower Clear Branch, in 2000 found 31 adult and 217 juvenile bull trout during periodic sampling in July, August and Sept. No bull trout or redds observed in Lake Branch or Tony Creek. One bull trout juvenile was found in Bear Creek in 2000. Over the period of record the range for the Clear Branch system ranged from 6 to 39 adult bull trout. The majority of fish were counted in upper Clear Branch Creek.
	Ladder traps	Powerdale Dam on mainstem Hood River	1992 to present	Trap is operated to capture, enumerate, and biointerrogate upstream migrating fishes. Project is component of Hood River Production Project funded by BPA. Numbers of upstream migrating bull trout, presumably adult individuals on a spawning migration, captured at the Powerdale trap continue to increase each year. Length and weight data suggest several age classes are present. Low of 2 in 1993, high of 28 in 1999. Eight of the 27 total captures in 2000 (May to Sept.) were recaptures of previously tagged bull trout. Five of the eight were first captured and tagged in 1999 and the remaining three were first captured and tagged in 1998.

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Hood (continued)	Ladder traps (continued)	Lawrence Dam on Clear Branch	1997 to present	Upstream migrants in lower Clear Branch Creek swim into and are trapped in the uppermost chamber via a finger weir. Bull trout as well as cutthroat are transported around Clear Branch dam and released upstream of the reservoir. No bull trout captured in 2000, presumably due to flood damage affecting attraction flow. Eight bull trout were captured between Sept. 2 1997 and Jan 1, 1998.
	Redd surveys	Bear Creek, lower Clear Branch	1999	Redd surveys are a challenge in Hood system due to glacial flour in many of the streams. Two redds observed in Bear Creek, one in Lower Clear Branch.
	Downstream Migrant traps	MF Hood River and tribs	1996 to present	Screw traps are located on the mainstem Hood River, East, Middle, and West forks. Purpose is to estimate through modified Peterson mark-recapture techniques the number of fish by species emigrating from the Hood River and its tributaries. Downstream migrating presumably juvenile bull trout are captured incidentally during this work. Project's main focus is downstream migrating juvenile salmon and steelhead (Hood River Production Project). In 2000, trap captured 24 bull trout in the MF Hood, 1 in mainstem Hood from May to July. Number of fish captured commensurate with past years.
Deschutes ODFW and CTWR data Riehle et al, 1997 Stuart et al, 1997 Thiesfeld et al, 1995	Redd surveys	Metolius mainstem and tributaries	1986 to present	From 1993 to present, redd counts ranged from 192 in 1997 to 549 in 2000. Not all current areas were surveyed prior to 1993.
		Shitike Creek		Redd survey counted 114 in 1999, 76 in 2000
		Warm Springs River	1999 to present	Redd survey counted 89 in 1999, 78 in 2000
		Whitewater River	1998 to present	Redd survey counted 16 in 1998, 30 in 1999, and 154 in 2000.
	Live trap fry	Jack Creek (Metolius)	1990	Total of 2194 juvenile bull trout were captured, over half (54%) were age 2. Fry comprised 61% of the fish moving downstream in late April and 13% in May. Peak downstream movement occurred in May and June.

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Deschutes (continued)	Snorkel surveys (day/night) & electrofishing	Metolius Tribs (Jack, Canyon, Roaring, Jefferson, Candle Creeks)	1990	Average density of age 1 through age 4 bull trout was 5.0fish/100 m^2 in Canyon Creek and 20.6 fish/100 m^2 in Jack Creek based on electrofishing. Snorkel counts conducted at night were similar to electrofishing. Daytime snorkel counts averaged less than 3.7 fish/100 m^2 for the five streams sampled.
	Trap Net	Lake Billy Chinook	1988 through 1993	Capture subadult (age 3-4) bull trout. From six to 15 bull trout were captured per night in trap nets.
	Creel Surveys	Lake Billy Chinook	1990 - 1993	Estimated total bull trout catch in 1990 was 1094, 1796 in 1991, 1391 in 1992, and 1992 in 1993. Percentage of bull trout released increased from 44% in 1990 to 84% in 1993.
	Warm Springs National Fish Hatchery	Warm Springs River	??	Bull trout monitored and videotaped at volitional passage facility at hatchery. As of May 29, 2001 at least 22 adult bull trout passed upstream past the hatchery site. Not sure if data has been summarized, or length of record.
Odell Lake	Night snorkel surveys of pool units	Trapper Creek, Crystal Creek	1996 to 1999	Stream divided into three sections. In 1996 only lower section was snorkeled, 26 age 0+ to 3+ bull trout observed. From 1997 to 1999, an average of 86 bull trout were observed (range 82 to 88), 2 to 4 classified as spawners were included in the count depending on the year.
		Odell Lake near mouth of Trapper Creek	1999	Three bull trout captured and marked using VIE tagging system.
	Redd counts	Trapper Creek	Periodic prior to 1996, annually since then.	Redd surveys a challenge due to high densities of Kokanee superimposition on bull trout redds. Counts range from 0 in 1998 (only lower section surveyed) to 24 in 1999.
		Crystal Creek		No confirmed redds found, one or two questionable redds observed in some years.
	Creel surveys	Odell Lake	1996 - 1999	Bull trout sampled ranged from low of 0 in 1997 to high of 30 in 1999; 1996 and 1998 results were 16 and 14, respectively. In 1999, 14 additional bull trout reported on days when not creeling. ODFW staff person was on hand daily to assist with education effort as well as run creel.

Oregon RU	Type of Census	Streams	Period of Record	Comments/Results
Odell Lake (continued)	Trap Net, Fyke Net	Odell lake (Trap)	1997 - 1999	One or more trap nets set at strategic locations in Lake; results disappointing for amount of effort expended. Three bull trout captured in 1999, one in years previous.
		Trapper Creek (Fyke)	1999 - present	Enumerate upstream migrants, mark/re-capture; total captured was 48 in 1999, 39 in 2000, of which 15 had been marked in 1999. Sex ratio about even.
Klamath River DPS Buktenica 1997	Electrofishing, snorkeling	Long, Coyote, Cherry, Threemile, Sun, Boulder/Dixon, Brownsworth, Deming, Leonard Creeks	Various between 1990 and present	Periodic Presence/absence surveys; brook trout control projects.
		Sun Creek	1992 - 1994	Data collected during brook trout removal project using electroshocking. Bull trout numbers ranged from a low of 58 in 1993 (drought suspected to be a factor) to a high of 119 in 1994.
John Day Hemmingsen et al, 2001 a,b,c USFS, 1999	Weirs and screw trap	Upper John Day mainstem, Call, Deardorff, and Roberts Creeeks.	1997 to present	Native Trout research project (Hemmingsen et al, 2001). Four weirs and one screw trap in mainstem John Day downstream from wier sites. Fish PIT-tagged, some fitted with radio tags. Data not summarized as yet. 1997 - 99 captured at weir traps (11 radio-tagged) and 158 at screw trap (118 PIT-tagged, 14 radio-tagged); 1998 - 159 captured in weirs; 155 in screw trap; 1999 - 173 captured at weirs, 61 captured in screw trap (number possibly influenced by location of trap).
	Electrofishing, two pass removal.	Clear and Big Creeks (MF John Day tribs)	1999	Population assessment as part of consultation on proposed timber sales. Densities in Big Creek ranged from 0.01 to 0.31 per m^2 (n = 118); and in Clear Creek ranged from 0.01 to 0.14 per m^2 (n = 56).
Malheur Tinniswood and Perkins, 2000	Redd surveys	Upper NF Malheur and tribs;	1994 to present	Standardized survey in 1996; 38 redds in 1996 (low) increasing each year to a high of 153 in 2000.
		Upper mainstem Malheur and tribs	1998 to present	Total of 83 redds counted in 1998, increasing each year to high of 141 in 2000. This system has brook trout and evidence of hybridization.

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Umatilla & Walla Walla Hemmingsen et al, 2001 a,b,c USFWS 2001	Redd surveys	Mill Creek (Walla Walla basin)	1994 to present; data through 2000.	USFS data and Native Trout research project (Hemmingsen et al, 2001). Redd counts range from a low of 189 in 1997 to a high of 191 in 1994, average is 160.
		NF Umatilla River	1994 to present; data through 2000.	Redd counts range from a low of 23 in 1995 to a high of 154 in 1999, average is 73.
		SF Walla Walla River	1994 to present; data through 2000.	Redd counts ranged from a low of 114 in 1995 to a high of 431 in 1999, average is 242.
	Ladder and screw traps	Mill Creek	1998 to present; data through 1999.	Native Trout research project (Hemmingsen et al, 2001). Upstream migrants captured at ladder trap, PIT-tagged, some radio-tagged; downstream migrants captured in screw trap. Determine timing and movement patterns of fluvial bull trout. Upstream migrant trap captured 164 bull trout in 1998 and 203 in 1999. The screw trap captured 615 bull trout in 1999, 1221 in 1998
Grande Ronde ODFW and USFS data; Hemmingsen et al, 2001 a, b, c.	Redd surveys	Little Minam River & Dobbin Creek	1996 to present; data through 1999.	Native Trout research project (Hemmingsen et al, 2001). Low of 54 redds counted in 1996, high of 381 redds in 1998.
		Catherine Creek subbasin (Grande Ronde basin)	1998 - 2000	Primarily NF Catherine Creek. Redds per mile was 25.4, 8.5, and 21.5 for 1998 through 2000, respectively.
		Indian Creek subbasin (Grande Ronde basin)	1998, 1999	No redds counted in 1999. Redds per mile in 1998 was 10.7 for Indian Creek, and 1.25 for EF Indian Creek.
		Upper Grande Ronde tribs	1999	Redds per mile ranged from 3.1 in Clear Creek to 0.32 in Lookout Creek.
		Lookingglass Creek and tribs	1994 to present; data through 2000.	Range was low of 15 redds in 1994, high of 62 redds in 1998. Average was 39 redds.
		Wenaha River	1999	47 redds counted
		Wallowa River Tributaries (Lostine, Bear, Deer, Goat, Hurricane creeks)	1999, 2000	In the Lostine 69 redds were counted in 1999; 37 in 2000. Bear Creek and trib Goat Creek were surveyed in 1999 (6 redds) and 2000 (5 redds). No redds were counted in Deer Creek in 1999, 6 counted in 2000. Hurricane Creek surveyed in 1999, 3 redds counted.
	Creel surveys	Grande Ronde	1993-2000	Bull trout caught during steelhead fishery. Don't have data, but can get.

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Imnaha/ Snake USFS and ODFW data No data for Idaho	Redd surveys	Imnaha mainstem, Big Sheep and Little Sheep Creek and tribs.	1999	Periodic redd surveys budgets permitting. 1999 - 36 redds counted.
	Creel surveys	Imnaha	1993-2000	Bull trout caught during steelhead fishery.
	Electrofishing	Imnaha and selected tribs	1993?	Population estimate
Hells Canyon Complex ODFW data; Hemmingsen et al, 2001 a,b,c No data for Idaho	Redd surveys	Silver Creek (Powder Subbasin)	1996 to present; Data through 1999	Native Trout research project (Hemmingsen et al, 2001). Redd counts ranged from a low of 7 in 1997 to a high of 36 in 1998.
		Pine Creek Basin selected tribs	1998, 2000	Redd counted in 1998 was 203, in 2000 was 60.
Flathead Subunit (MFWP, 1999)	Redd Surveys: Annual	North Fork Flathead: Big, Coal, Whale, Trail Creeks. Middle Fork Flathead: Morrison, Granite, Lodgepole, Ole Creeks.	1979 to present	Annual surveys were done by experienced field crews in areas of known spawning (previously identifed spawning areas-index reaches). Redds were scored using two classes: definite and probable.
		South Fork Flathead: Wounded Buck, Wheeler, Sullivan, Quintonkin, Youngs, Gordon Creeks, White River, Little Salmon River.	1993 to present	
		Swan River Basin: Swan River, Holland Lake and Lindberg Lake. Associated tributaries include Elk, Goat, Squeezer, Lion, Piper, Jim, Lost, Woodward, Soup, and Cold Creek.	Swan River: 1982 to present Holland Lake: 1994 to present Lindberg Lake: intermittent data available from 1994 to present	

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Flathead Subunit (continued)	Redd Surveys: Basin-wide	Selected tributaries of the North and Middle Forks of the Flathead River including index reaches.	1980-82, 86,91,92, 97.	During the 7 years of basin wide surveys, an average of 52 percent of all bull trout spawning occurred in 14 MF tributaries, while 16 NF tributaries supported an average of 48 percent of the total Flathead Lake spawning run. Selected tributaries in the North Fork included Hallowat, Mathias, Red Meadow, Shorty, Cauldrey, Cabin, Howell, Starvation, Sage, Kishenehn, and North Fork River. Selected tributaries in the Middle Fork included Nyack, Park, Bear, Long, Schafer, Dolly Varden, Clack, Bowl, Strawberry, and Trail Creek. Other surveyed areas include Cyclone Lake, Kintla Creek and Logan Creek.
		Selected tributaries of the South Fork Flathead and Hungry Horse Reservoir including index reaches.	1993	Non-index reach tributaries included Spotted Bear, Bunker, Harrison, Mid, Black Bear, Holbrook, Burnt, Barlett, South Fork White, Hahn, Otter, Cabin, Marshall, Babcock, Jenny, Danaher, Camp, Basin, Foolhen, Rapid, Spring, Calf, Bar, and Limestone Creeks.
	Electrofishing (Juvenile Salmonid Abundance)	Flathead River and selected tributaries (Big, NF/SF Coal, Red Meadow, Whale, Morrison Creek)	Intermittent stream surveys from 1980 to present	Surveys generated catch per-unit-effort, densities/100m², N, and p-values. Both bank shocking and backpack electroshocking techniques were utilized.
	Floating and Sinking Gill Nets (Relative Abundance Surveys)	Flathead Lake	Intermittent stream surveys from 1981 to present.	Five areas within Flathead Lake were surveyed with three sinking and three floating gill nets, set overnight. There is length-frequency data, fish per net, and species composition per catch data recorded.
		Hungry Horse Reservoir	Montana Fish, Wildlife and Parks has used gill netting to monitor fish populations since 1958. Seasonal netting (May, August, and October) 1988-1992. Fall Netting: 1988 to present	All fish were identified, weighed, and total length recorded (length frequency). All gamefish were sexed, and state of maturity was determined. Scales and otoliths were also removed for age and growth information.

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Lower Clark Fork Subunit	Redd Surveys: Annual	Lower Flathead River (including Jocko R. and Mission Cr.)	1996 to present	For more information on redd survey results and tributary sampling, see Status Summary, USFWS, 1998 and Clark Fork River Recovery Unit Chapter, USFWS (DRAFT), 2001.
		Clark Fork R (Flathead R. to Thompson Falls Dam)	1996 to present	
		Noxon Reservoir (Vermillion River and Prospect Creek)	1993 to present	
		Cabinet Gorge Reservoir (Rock Creek and Bull River)	1992 to present	
		Lake Pend Oreille and associated tributaries.	Intermittent stream surveys from 1983 to present	Redd count data are available for mainstem reaches and smaller tributaries in these Lake Pend Oreille watersheds: Gold Creek, North Gold Creek, Granite Creek, Johnson Creek, Twin Creek, Lightning Creek, Strong Creek, Trestle Creek, Pack River, and the Clark Fork River below Cabinet Gorge Dam.
Upper Clark Fork	Redd Surveys: Annual	Clark Fork R. (Upstream from Milltown Dam) and associated tributaries	1994 to present	Redd surveys were done intermittently over the range of years for associated tributaries. More continuous annual surveys were done on the NF Blackfoot River, Monture Creek, and Copper Creek in the Blackfoot River Drainage and on MF Rock Creek and Stony Creek of the Rock Creek Drainage.
		Rock Creek and associated tributaries		
		Blackfoot River and associated tributaries		
		Clearwater River and associated tributaries	N/A	No data available
		Clark Fork R. (Milltown Dam to Flathead River)	N/A	No data available
		West Fork Bitterroot River	1996 to present (local populations were monitored at least 3/5 years)	The Mean Total # of Redds counted (per year) for the 1 local population being monitored was 3 redds.
		Bitterroot River and associated tributaries	1994 to present	Redd surveys were done intermittently over the range of years for associated tributaries. More continuous annual surveys were done on the Upper East Fork Bitterroot River and Skalkaho Creek.

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Priest Subunit	Redd Surveys: Annual	Priest Lake and its tributary system (including Upper Priest Lake)and the Priest River downstream to its junction with the Pend Oreille River.	1996 to present (local populations were monitored at least 3/5 years)	The Mean Total # of Redds counted (per year) for the 11 local populations being monitored was 39 redds.
Kootenai River (USFWS, 1998)		Lower Kootenai River	1992 to present	O'Brien Creek is considered the most important spawning and rearing area in the lower Kootenai river subpopulation in Montana (USFWS, 1998)
		Bull Lake	Intermittent stream surveys from 1996 to present	Keeler Creek and its North and South Fork tributaries were surveyed for the first time in 1996; a total of 73 redds were located in the Keeler drainage
	Redd Surveys: Annual	Middle Kootenai River	Intermittent stream surveys from 1985 to present	Redd surveys since 1985 in Quartz Creek drainage have yielded counts ranging from 16 to 89. Since 1991, redds have also been documented in Pipe Creek, Fisher river, Silver Butte, and Bear Creek
		Upper Kootenai River	1983 to present	Since surveys were initiated in 1983, redd counts have fluctuated between 21 and 57 in Grave Creek, 3 and 31 in Clarence Creek, and 0 to 6 in Blue Sky Creek.
		Sophie Lake	N/A	Bull trout were documented in Sophie Lake in the 1960's. No abundance or distribution information is available.

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Clearwater	Redd Survey	Squaw Creek	mid-1990's	Within the Clearwater, there are no data to estimate abundance. High redd counts in Squaw and Papoose creeks were 13 and 3, respectively. Since 1999, a total of 2 redds have been found in Newsome Creek and the American River. Irregular surveys associated with anadromous fish surveys have been conducted throughout the basin.
		Papoose Creek	mid-1990's	
		Newsome Creek	1999	
		E.F. American R.	1999	
Little Lost	Electrofishing	Tributaries	1987; 1992-97	Fish surveys have been conducted throughout much of the Little Lost River. Bull trout densities were estimated at 20-30 fish/100 square meters.
Coeur d'Alene	Redd Survey	St. Joe River	1992-present	Within the Coeur d' Alene, bull trout reproduction is confined the the Upper St. Joe River and a few tributaries. Bull trout redds have been counted continuously since 1992 in three index areas in the mainstem St. Joe River, and irregularly in near by tributaries. Redd counts have varied between 30-70 annually. Regular snorkel surveys occasionally observe bull trout. Irregular electrofishing surveys are also conducted.
	Snorkel Surveys		NA	
	Electrofishing		NA	
Southwest Idaho	Snorkeling / Electrofishing	Boise River	1990's-present	In the Boise River basin-wide surveys using electrofishing and snorkeling to assess spatial distribution. Fifty-five 100 meter sites in the N.F. Boise have been surveyed and bull trout have been observed at half the sites. Irregular electrofishing and snorkel surveys have also been conducted in the Payette and Weiser rivers. Abundance estimates (> 300mm) in Arrowrock Reservoir (471 in 1996-97, 95% CI 389-590) and Anderson Ranch Reservoir (368 in1999-00, 95% CI 282-454) have been conducted using traps and gillnets. Radio tags have been implanted in some fish to study movements. A weir in the N.F. Boise River collected 266 bull trout during late August-late October. A screw trap was operated in a tributary in 2000-01.
	Traps and gillnets		1996-97; 1999-00	
	Weir		1999-present	
	Screw Trap		2000 and 2001	
Salmon River	Redd Surveys and trapping	Rapid River	1992-present (redd counts); 1973-present (weir counts)	Distribution data exists throughout the Salmon River. Abundance data exists in the West Fork of the Yankee Fork, Falls Creek, Warren Creek, Slate Creek, John Day Creek, W.F. Chamberlain Creek, and South Fork Salmon River. Marked fish and PIT tagged fish at the weir in the Rapid River have provided survival estimates.

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Middle Columbia	Redd Surveys	Ahtanum Creek (NF, MF, SF)	1993-present	The WDFW in cooperation with the US Forest Service (USFS) and the Yakima Nation conduct annual bull trout spawning ground surveys in selected locations within the basin (See Yakima Case History for details). This information represents the best census information available for distribution and abundance within the Yakima River. In addition to redd surveys, juvenile presence and associated density estimates using electrofishing and snorkeling have be made in Ahtanum, Indian, and Deep creeks.
		Naches River (Rattlesnake and Crow creeks, American River)	1994-present	
		Rimrock Lake (SF Tieton, Indian Creek)	1984-present	
		Buming Lake (Deep Creek)	1989-present	
		NF Teanaway (DeRoux Creek)	1996-present	
		Kachess Lake (Box Canyon Creek, Upper Kachess River)	1984-present	
		Keechelus Lake (Gold Creek)	1984-present	
Upper Columbia	Redd Surveys	Entiat River (Mad and Entiat rivers)	1989-present Mad River, 1999-present Entiat River	The vast majority of the known bull trout spawning and rearing occurs on the Mad River.
		Wenatchee River (Rock, Chikamin, Phelps, Panther, Mill and Nason creeks, Chiwawa, White, and Little Wenatchee rivers)	Rock, Chikamin, Phelps, Panther creeks, Chiwawa River (1989-present), White and Little Wenatchee river (1999-present), Mill Creek (1996-present), Nason Creek (1997-present).	In addition to redd surveys, recent snorkel surveys have been conducted on a limited basis in the Chiwawa River (data not available at this time). Radio-tracking studies currently monitoring movement patterns in the Wenatchee River and mainstem Columbia (see workshop agenda).

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Upper Columbia (continued)	Redd Surveys (continued)	Methow River Tributaries (Including Twisp River and Early Winters Creek)andGoat, Crater, West Fork, Lost River, Monument, Early Winters, and Twisp River)	Incomplete surveys 1992-98. Complete surveys 1999-present.	Surveys in Methow River include Goat, Crater, Monument, Wolf creeks, Lost River and West Fork. Redd survey areas within Early Winters and Twisp systems include Cedar, East Fork Buttermilk, Reynolds, and North creeks and mainstem Twisp River. Recent electrofishing and snorkel surveys have been conducted on a limited basis in the Twisp River, Early Winters Creek, and Goat Creek.
Northeast Washington	No established protocol	Pend Oreille River and tributaries	NA	Only limited sighting of bull trout have been recorded. One verified record of a large fin clipped bull trout originating from Lake Pend Oreille (Trestle Creek) was captured in Indian Creek below Albeni Falls Dam in 1997.
Snake River	Redd Surveys	Tucannon River tributaries including Cummings, Panjab, Sheep, and Bear creeks and Asotin Creek (upstream tributary to the Snake River)	1990-present	Bull trout in Asotin Creek are thought to occur in very low numbers. Juvenile density was estimated in the N.F. Asotin Creek at 0.4 fish/100 square meters (1991). WDFW (1991) calculated juvenile density in upper Tucannon at 6 fish/100 square meters.
Lower Columbia	Redd Counts and mark-recapture	Cougar Creek Swift Reservoir (Pine and Rush creeks)	1988- present (redd counts Cougar Creek), 1994-present (mark-recapture Swift Reservoir)	Mark-recapture estimates in Swift Reservoir represent best estimates within the basin (see workshop agenda). Recent sampling has expanded distribution within to N.F. Lewis to upper basin above barrier falls and may indicate presence of resident form. Recent snorkel surveys in Klickitat have identified spawning populations in the West Fork. In the White Salmon, limited sampling have verified only two bull trout since 1986. Adult bull trout have been observed below Condit Dam on the White Salmon and are thought to have originated from the Hood River.
		Klickitat River	2000-present	
		White Salmon	NA	

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